A simple ball-drilling rig

A simple drilling rig is described for boring non-standard holes when the Beevers system of model-making is used.

Beevers (1970) has described an extremely useful 1 cm = 1 Å molecular modelling system. Balls with standard drillings are readily available from Dr Beevers and when these are used to assemble molecular models, it is sometimes necessary to use non-standard holes, e.g., for support rods, for strained systems, for portraying unit cells, etc.

A drawing of the device is shown in Fig. 1. The rig consists essentially of two lengths of box-section extruded aluminum, 1 and 2. In the shorter section, 1, is clamped a small electric drill, 3, which can be obtained from model-making suppliers. The clamp is such that the motor may be aligned and centred with respect to the orienting device. Two side plates, 4, provide a track for the top section to slide along and a small bolt, 5 (not shown), projecting through an elongated hole, serves both to hold the two aluminum sections together and to limit the travel of the drill. Lubrication with a viscous oil ensures smooth action. A hole is drilled perpendicular to the drilling direction right through the centre of the system. This assists in holding balls by hand for drilling initial holes. Subsequently, balls may be held by a "bond" clamped in the 1 mm hole.

The device was made using only hand tools, a drilling machine and a rudimentary lathe. It was found to be adequately rigid and accurate. By setting the correct length of drill protruding from the chuck, drilling to a preset depth is possible.

While it is tedious for one to build a full model using such a rig, it is a useful tool in conjunction with a set of balls having standard drillings as supplied by Dr Beevers.

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Meeting Report


The trend towards international collaboration in Europe found its expression in crystallography last month through the First European Crystallographic Meeting organized by the European Committee of Crystallography under the presidency of Professor Authier and attended by an estimated 500 persons. The conference was organized around two main topics: 'Molecular Interactions' and 'Accurate Determination of Electron Densities'. The topics were emphasized through a series of eight plenary lectures, six of which dealt with molecular interactions (G. S. Pawley, J. D. Dunitz, A. Novak, A. Kitaigorodskii, E. Giglio and S. Lifson), one with electron densities (P. Coppens), while a final lecture was given on protein crystallography (R. Huber).

In the first group Pawley (Edinburgh) emphasized the importance of the study of molecules in motion and illustrated his lecture with results of inelastic scattering studies on orthorhombic sulfur from which molecular distortions can be calculated which agree very well with observations. Dunitz (Zürich) showed how the study of many static systems in the crystalline state can give information on molecular deformations along the coordinate of a chemical reaction such as the nucleophilic addition of a tertiary amine nitrogen to ketone carbonyl groups. Novak (Paris) presented a detailed comparison of infrared and Raman spectra with crystallographic information on hydrogen bonding in solids. Kitaigorodskii (Moscow) emphasized the importance of solid solutions and the application of the non-bonded interaction functions to these systems. He also proposed a new quickly evaluated equation according to which the value of a theory V is equal to the (number of predicted values/number of parameters) - 1. Giglio (Rome) described the determination of molecular packing by potential energy calculations with semi-empirical potential functions for intermolecular interactions. Lifson (Rehovoth) talked on the consistent fitting of a large body of experimental information on hydrocarbons, including unit-cell parameters, heats of sublimation, molecular and lattice vibrations, thermal expansion and enthalpy differences with a set of energy functions.

The lecture in the second group by Coppens (Buffalo) analyzed the theoretical and experimental knowledge of electron densities in molecules and crystals and defined the aims of such studies as the testing of theoretical methods, the elucidation of the electronic structure of large molecules, the derivation of unbiased parameters from X-ray intensities, the study of intermolecular interactions and the measurement of derived physical properties. Finally, the lecture by Huber (Munich) described recent results on the structure of the complex between the pancreatic trypsin inhibitor and trypsin.

The meeting was further enlivened by a great many contributed papers which were impressive by their variety, multitude and generally high quality. Unfortunately, owing to the short duration of
the meeting (three working days) little
time was allotted to each paper and three
simultaneous sessions had to be organized,
with typically six papers in a 75
minute session. Most chairmen used
about half the allotted time for short
presentations and the remainder for dis-
cussion. This made the sessions more
coherent, but made it difficult to attend
selected papers in different sessions.

However, even though an ideal format
for such a meeting was not reached in
Bordeaux, a serious attempt was made to
eliminate the drudgery of a long in-
coherent succession of short contributed
papers. Equally important, the atmos-
phere at the meeting was exciting, many
new contacts were established and one
came away with the feeling that conti-

Professor E. C. Lingafelter succeeds
R. A. Young as President of the Ameri-
can Crystallographic Association for
1974. Dr M. H. Mueller will continue
to serve as Secretary of A.C.A. until the
end of 1975. Dr R. D. Burbank and Dr
C. N. Caughlan have been elected
Vice-President and Treasurer, respec-
tively, for 1974.

Professor A. C. T. North has been ap-
pointed to the Chair of Biophysics and
Head of the Astbury Department of Bio-
physics at the University of Leeds. Previ-
ously he was a Senior Research Officer
in the Laboratory of Molecular Bio-
physics at the University of Oxford.

International Union of
Crystallography

Commission on
Crystallographic Computing

Call for Material for Supplement to the Third Edition of the
World List of Crystallographic Computer Programs

The third edition of the World List of
Crystallographic Computer Programs has been published in the Journal of
Applied Crystallography (1973), 6 (4),
pp. 309–346. The required information
for submission of programs to this list
was first described in an announcement
[Acta Cryst. (1971), A27 (4), 393–396],
and again as part of the World List.

Since a large number of useful crys-
tallographic computer programs were
not included in the third edition, the
Commission on Crystallographic Com-
puting has decided to publish supple-
ments to the list on an annual basis,
until such time as a completely new list
is required. This work is done for the
benefit of crystallographers in general,
and to avoid any wasteful duplication of
several. Therefore, the Commission wishes
to take this opportunity to urge all crys-
tallographer programmers to take the
time to prepare the material required for
for the proposed supplement. The for-
mats and abbreviations will be identical
with those for the third edition. Please
send the necessary information about
your unstated programs, within two
months from the date of publication of
this announcement, to the Editor in
charge of the Supplement: Dr G. C.
Bassi, CNRS Laboratoire de Rayons X,
B.P. No. 166, Centre de Tri, 38042
Grenoble Cedex, France.

Notes and News

Announcements and other items of crys-
tallographic interest will be published under this head-
ing at the discretion of the Editorial Board. The
notes (in duplicate) should be sent to the Exec-
utive Secretary of the International Union of
Crystallography (J. N. King, International Union of
Crystallography, 13 White Friars, Chester CH1
1NZ, England).

The Montpellier Documentation Centre
has just issued a new index of French
industrial and university laboratories
which produce mineral crystals. This
index supersedes the index prepared in
1967.

This index may be obtained by send-
ing the sum of three francs (postage-
stamps) or four international reply
coupons to Professor Vergnoux, Centre
de Documentation sur les Synthèses
Cristallines, Université des Sciences et
Techniques du Languedoc, Place Eu-
gène Bataillon, F-34060 Montpellier
Cedex, France.

Book Reviews

Works intended for notice in this column should
be sent direct to the Book-Review Editor (H.
M. Woolfson, Physics Department, University
of York, Heslington, York Y01 5DD, England). As
far as practicable books will be reviewed in
a country different from that of publication.

The opaque minerals in stony
meteorites. By PAUL RAMDOHR.
Pp. 245, Plates 70. Amsterdam:
Elsevier, 1973. Price f65 (about
U.S. $ 25.20).

This relatively small book is rather of the
nature of a final research report of the
author's own extensive work concerning
the examination of polished sections of
some 350 meteoritic stones. As the title
titles, the interest here is not in the
dominant silicate minerals but in the
less abundant opaque or semi-opaque
minerals and the emphasis is on the